W. H. AYERS & C. A. DORR.

TRIMMING KNIFE.

APPLICATION FILED AUG. 4, 1909.

940,420. Patented Nov. 16, 1909.

Fig. 1

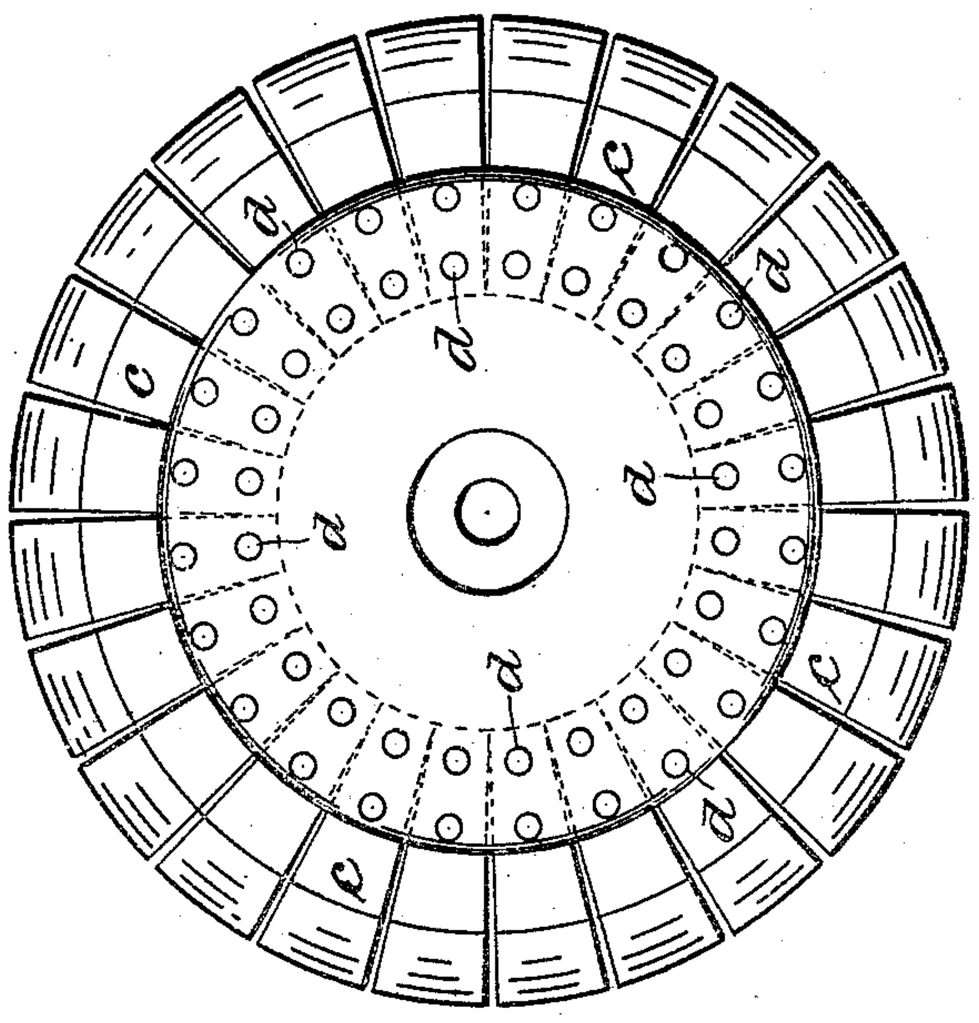


Fig. 4.

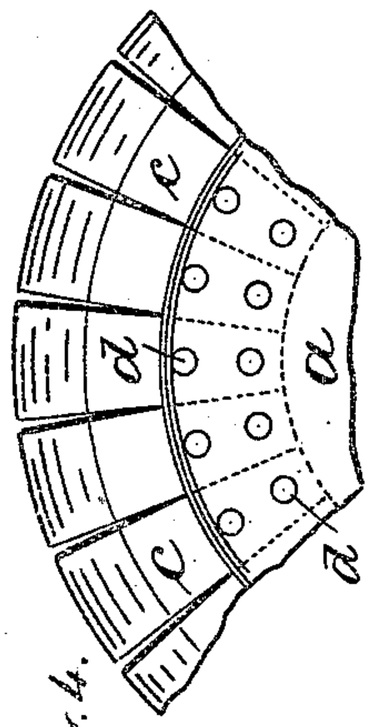


Fig. 2

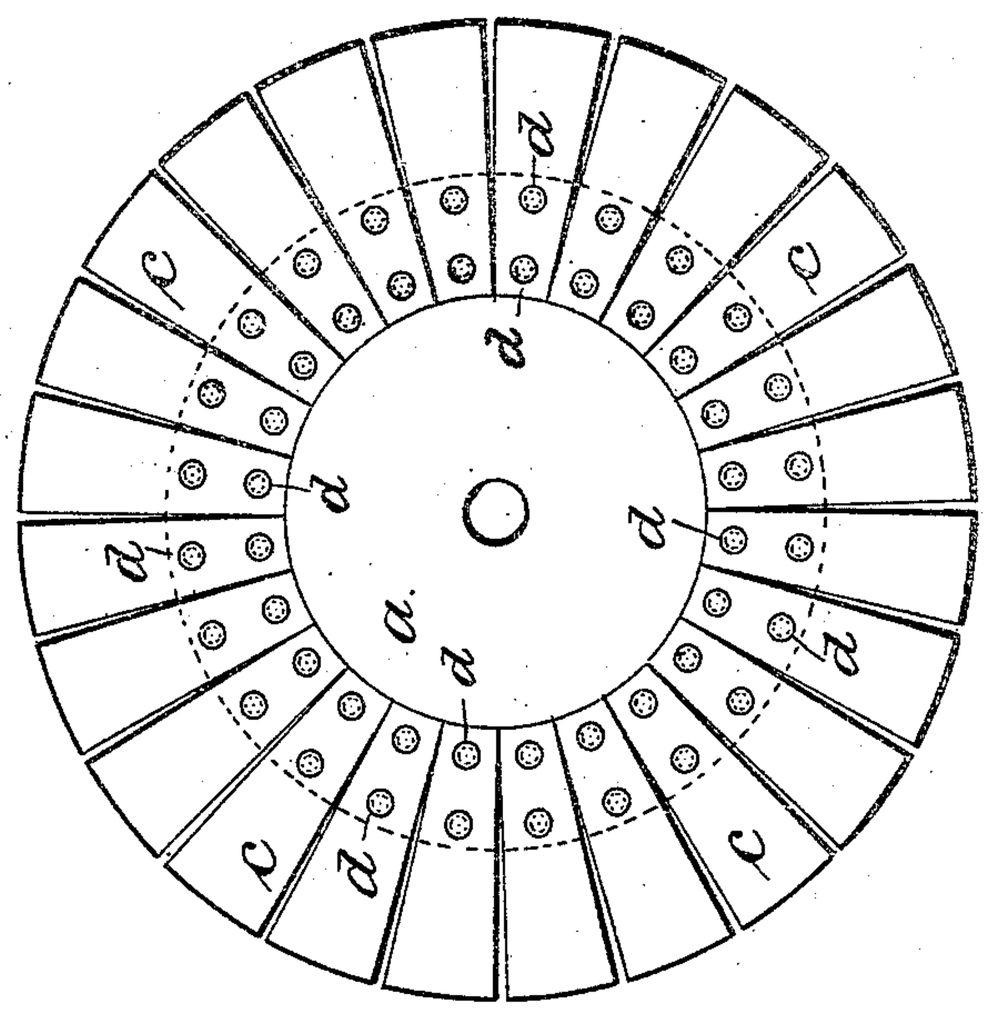
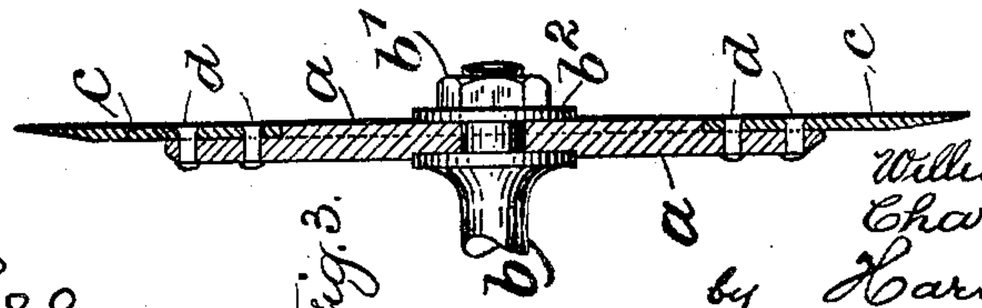


Fig. 3.



Witnesses
Chas. H. Smith
A. D. Serrell

Inventors
William H. Ayers.
Charles A. Dorr.
by Harold Serrell
their Atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. AYERS AND CHARLES A. DORR, OF LYNDHURST, NEW JERSEY.

TRIMMING-KNIFE.

940,420. Specification of Letters Patent. **Patented Nov. 16, 1909.**

Application filed August 4, 1909. Serial No. 511,145.

To all whom it may concern:

Be it known that we, WILLIAM H. AYERS and CHARLES A. DORR, both citizens of the United States, residing at Lyndhurst, in the county of Bergen and State of New Jersey, have invented an Improvement in Trimming-Knives, of which the following is a specification.

Our invention relates to a circular trimming knife for rough trimming the edges of books so as to produce a simulation of an uncut edge with more or less of the pronounced irregularities and unevenness of the usual uncut edge.

Heretofore circular trimming knives have been employed for cutting the edges of books, but these knives have been made with a continuous edge and in use these edges would heat to excess and would often burn the paper and also would not cut evenly.

Our improved trimming knife is a circular built-up structure, and in carrying out our invention, we employ a series of circularly arranged radially disposed blades slightly spaced apart at the edges so as to leave between the blades air gaps which in the cutting operation carry air into the book and prevent the burning of the leaves as well as provide clearance for the particles of paper as cut.

In the drawings Figure 1 is an elevation of the obverse or outer side of our improved trimming knife. Fig. 2 is an elevation of the reverse or back side of the trimming knife. Fig. 3 is a vertical cross section through the knife and elevation of the shaft for carrying and rotating the same, and Fig. 4 is a partial elevation showing a modification.

a represents a mandrel disk upon which the blades are mounted. This disk is centrally apertured to receive the reduced end of the shaft *b*, and centrally recessed on one face concentric with the shaft aperture to receive the shaft flange or shoulder, and a nut *b'* screws upon the end of the shaft with the washer b^2 beneath it to hold the circular trimming knife in position on the shaft. This mandrel disk is recessed on the face opposite to the shaft shoulder and adjacent to the edge to receive the radially disposed blades *c* which are of tapering form and secured by the rivets *d* to the mandrel disk *a* around the edge thereof. These blades are all alike and are narrower than equal radial subdivisions of approximately their area so that when the blades are secured to the mandrel disk they are slightly spaced apart particularly from the periphery of the mandrel disk to the periphery of the blades. This spacing produces air gaps.

In Figs. 1 and 2, we have shown series of radially disposed blades *c*, each of which taper flatwise throughout their length; therefore the spaces or air gaps between the juxtaposed edges of the various blades as secured to the mandrel disk taper from substantially nothing at the inner end of the blades on the shoulder of the mandrel disk to an appreciable opening at the cutting edge. Corresponding edges of the blades are beveled upon one face, viz, the outer or obverse sides as shown in Fig. 1 to produce sharpened cutting edges to the blades.

In Fig. 4 we have shown a form of our invention in which the edges of the blades come into substantial contact where they overlie the mandrel disk and are riveted thereto; these edges being formed upon true radial lines; the spacing producing the air gap between the edges extending beyond the periphery of the mandrel disk gradually increasing to the cutting edge of the blades. We do not, however, limit our invention to either form shown, as we may employ either form of blade without departing from the nature or spirit of the invention.

In the operation of the trimming knife of our invention, the air gaps between the juxtaposed edges of the blades as the cutter is advanced into the book carry air into the book and so prevent the cutters heating and thus overcome all liability of burning the paper of the book. Furthermore, the air gaps provide spaces for receiving any fine particles produced in cutting which are delivered from between the edges of the cutters by the centrifugal action as soon as the blades clear the book.

We claim as our invention:

1. A trimming knife of circular form comprising a mandrel disk for a driving shaft and a series of circularly arranged flat blades having curved peripheral cutting edges and slightly spaced apart, and means for securing the same to the mandrel disk.

2. A trimming knife of circular form comprising a circular mandrel disk centrally apertured for a driving shaft, said mandrel disk having a circumferential edge recess or reduced portion and a series of circularly arranged flat blades received in said recess, and rivets for securing the same to the mandrel disk, said blades being slightly spaced apart so as to provide between them air gaps and having their cutting edges arranged in a true circle, substantially as set forth.

Signed by me this second day of August, 1909.

WILLIAM H. AYERS.
CHARLES A. DORR.

Witnesses:
A. H. SERRELL,
BERTHA M. ALLEN.